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SOURCES OF INFORMATION UPON THE PUBLIC HEALTH MOVEMENT

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Introduction

Someone has called vital statistics the Cinderella of modern public hygiene. She sits in the chimney corner and sifts the ashes of dusty figures, while her proud sisters, Bacteriology and Preventive Medicine, go to the ball and talk about the wonderful things they have done. In the absence of statistics visionary theories are set forth, so contradictory that scientific reasoners and business men give little attention to them. We know social facts completely when we measure them. We cannot measure social facts without statistics. They are the testing instrument for theories and schemes of social reform; they show us where to look for the causes of social mal-adjustments; they become the basis of the great preventive campaign which characterizes the movements toward social betterment at the present time. Consequently, the quantitative study of social phenomena is attracting the attention of an increasing number of students to-day.

Sound vital statistics are the necessary basis of modern sanitation and register clearly the steps in the campaign against preventable diseases, often pointing the way to the next step. They furnish a definite measure of the value of sanitary improvements. Pittsburgh spends \$5,000,000 on a new filter plant and the death rate from typhoid at once falls. Havana is cleaned up by the United States Government and the yellow fever scourge subsides. Statistics register the progress of medicine and surgery. Antiseptic surgery comes into use and the death rate from operations, especially in war, declines to a remarkable degree. Vital statistics furnish the basis of an approximate estimate of national health.

In the present paper the sources of statistical data will be discussed and criticised from the point of view of their accuracy and completeness in the United States. Some comparison of public

health statistics in the United States will be made with foreign countries. Caution in the use of material and care in interpretation will be emphasized by the presentation of concrete examples of error. Finally, some of the problems of the public health movement upon which statistics may throw light will be suggested and illustrated by concrete material.

I. SOURCES OF STATISTICAL INFORMATION

1. The United States Census Reports and Bulletins

The United States is far behind the other great civilized nations in the field of vital statistics, which includes a record of deaths, births, and marriages—a field most closely touching the interests of the people through its connection with public health. Frontier conditions long proved an effective bar to the development of public records of births, deaths, and marriages. The scattered population and the individualism which has always been impatient of official interference in America—both hindered an accurate registration. The official census was taken but once in ten years, and the data thus secured were out of date before the results could be published. The need was for an annual record. This involved accurate and complete state and local registration which has not been secured in many of our states. In 1880 records of death based on an effective system were obtained from about one-sixth of the population of the country, but this area had enlarged in 1909 to include five-ninths of the population—the *registration area*, as it is called. This area does not include the Southern States because their records of deaths are not sufficiently complete. No longer, therefore, do the returns on vital statistics come from the enumerators of the decennial census. Since the establishment of a permanent Census Bureau returns are received monthly from the registrars of state and local mortality in the registration area, and the results are published each year in a special report on "Mortality Statistics."

The accurate and complete record of all deaths is important because the rate is an index of the condition of the different communities from year to year—the relative healthfulness of different localities and occupations; of different age and sex groupings. It shows up evil influences in city life and reveals the dangers accompanying civilization.

The usual method of securing a record of deaths is to require a burial permit, to secure which a death certificate is necessary, made out by the physician who attended the deceased at death, stating age, occupation, cause of death, etc. One great difficulty in the way of accuracy has been the lack of uniformity in this blank form of certificate. Perhaps no single step taken by the federal bureau has meant so much for the welfare and sanitary protection of the American people as the successful introduction of the "standard certificate."

The difficulty of classification of the causes of death is a constant source of error and lack of uniformity. Medical men have made very imperfect returns of the causes of death as a result. What do we know about the real incidence of tuberculosis when health officers allow deaths to be reported so that they can only be classified as, "Probably tuberculosis?" There is much deliberate suppression of such causes as alcoholism and syphilis. Sometimes there is more than disease present, or disease and accident together. The adoption of the Bertillon system of classification of the causes of death over the registration area and outside has added greatly to the uniformity of mortality statistics, and renders the results in different places comparable.

An important aid in securing accurate statistics would come from better training on the part of those who are entrusted with the registration of vital statistics. The recent rapid development of the public health movement has increased the demand for this training. In England, where vital statistics have reached their highest development, medical officers of health are usually graduates of great universities and, besides, of a special course on public health in which a diploma is given.

In the United States the registration of vital statistics and the supervision of local health matters is as likely to be entrusted to a civilian as to a physician—at least to one who has devoted little time or thought to the larger problems of public health. The work of a statistician has not yet been established as a profession. Since 1850 there have been eight directors of our census, an average length of service of four and one-half years. If we compare the careers of the seven persons most conspicuously identified with recent census work in England, France, Germany, Prussia, Italy, Austria, and Russia, we find the average official life and work in statistics

has been twenty-six years, or about six times that in the United States. The accuracy and completeness of the statistics published by the United States Census Bureau depend upon the efficiency of local registration officials. An examination of fifty-six cities of the United States showed that in all except eight the work of registration is entrusted to the health officers, as it should be. In all but four the permit before burial is in force. A number of cities direct that the physician sign the certificate within a specified time, but most cities make no provision for a certificate of death which occurs without an attending physician.

One of the greatest needs for the public health movement is more accurate records of occupational mortality; and, in addition, data from which the morbidity rate may be calculated. The annual reports now publish mortality by age, sex and occupation, but the United States has almost nothing as to the morbidity rate. This one-sided information results in wrong conclusions from the federal statistics, for instance, as to the death-rate among women factory workers. It appears lower than for any other class of society—the truth being of course that few women die as factory workers, because when death overtakes them most have passed into the class of housewives. Nevertheless, their occupation may have been fatal in undermining health.

Besides, the mortality statistics do not give really accurate information, because the classification of the trades is not sufficiently discriminating. For example, the man working at the metal polishing wheel is classed with other metal workers. As a result, the federal figures do not show the enormous death-rate from pulmonary diseases among metal polishers. For these data we must go to the records of the Metal Polishers' Union.

In older European countries injury to health in the trades is studied and controlled by the government. The physicians of Germany, France and Great Britain are alert to the close connection between occupation and disease.

The accuracy of figures on occupational mortality depend upon: (1) correct statement of occupation and age in the enumeration of population in the United States census; (2) correct statement of occupation, by the same classification as for the United States census of population, and correct age upon the death certificate; (3) precise statement of the cause of death upon the certificate.

The data are derived from two different and largely independent sources. The returns of death, received from the registration states and cities, are copies of the death certificate made out by physicians or relatives. But the occupations of the living population are stated by the census enumerators according to instructions. The accuracy of statement may vary greatly in the two sets of returns even if the classification of occupations be the same in the two cases, which is likely not to be the case. But the only method of getting at the death-rate peculiar to any given occupation is to compare the mortality in that occupation with the number employed for that occupation according to the population returns. This comparison was attempted in the 1900 census, and since that time in the annual reports on mortality. There is still another difficulty. The population in inter-census years must be estimated for each occupation. This cannot be accurately done for more than five years after the last general census. This is an argument for a population census every five years. Thus, in the "Mortality Statistics" for 1908 it was necessary to state simply the percentage which mortality from a certain cause formed of the mortality from all causes in the given occupation. It may be said that the English figures for occupational mortality are much more complete and accurate. What is needed in the United States, both for mortality statistics and for population statistics, is a list containing all the more important individual occupations, with an exact statement of the terms included under each, so that all, whether census enumerator or physician or undertaker, may comprehend and make a uniform and comparable classification of occupations.

Mortality of Children.—The deaths of children should, if possible, be recorded by single months for the first two years of life and for the most important causes of death. This is not done in the United States.

In England and Wales infant deaths are recorded only during the first year by months, but in Berlin the record is by months for the first two years. These facts are of great importance in the problem of infant mortality. Besides, there should be a distinction made between deaths of children breast-fed and bottle-fed, since these data throw light on the solution of the problem of infant mortality.

On page 50 of the annual report of the medical officer of health
(309)

of Blackburn, England, the particulars of the nursing and feeding of 2,705 children under 7 months old are given.

Registration of Births.—In the "Supplementary Analysis of the Twelfth Census," page 237, we find the following statement: "The twelfth census contains no statistics of births or marriages. It has been found impracticable to gather information through census enumerators regarding either the births or the marriages that occurred during the census year with enough completeness to make the resulting figures worth the cost. The records of state or municipal registration offices upon births and marriages—the only alternative sources of information—are often lacking, and where they exist are incomplete in so many cases that no satisfactory statistics of births or marriages for the United States can be derived from them." In his contribution to the "Report of Vital and Social Statistics of the Eleventh Census," published in 1896, Dr. Billings stated: "We have no fully complete and accurate registration of births in any part of the United States." W. A. King, chief statistician for vital statistics in the twelfth census, began his discussion of births by admitting that "the data relating to births are the most incomplete and unsatisfactory of any treated in this report. Were it not considered desirable to give such results as bear upon the question for the information of students of statistics, the subject might be dismissed with the statement that they are entirely inadequate to determine, directly, the general birth rate of the country, or, what is of equal practical importance, the relative birth rate of different classes of the population."

The registration of births is extremely important for the knowledge of infant mortality, for the protection of infant life, and for securing the legal rights of children. Yet, not a single State in the Union, nor a single city of any considerable size, makes positive claim that it registers as many as nine births out of every ten that occur. Even the city of Washington, whose law for this purpose is a direct enactment of Congress, does not exceed this limit of efficiency. "The registration area for births consists of a few interrogation points." It was not until 1891 that the annual number of recorded births in New York City exceeded the number of deaths.

The total number of births must be known before a computation of infant mortality can be made which will be comparable with

the rates given in the vital statistics of all civilized nations except the United States. The infant death rate depends upon the comparison of deaths under 1 year of age with the total births. In this respect the infant death rate differs from that of other age groups, which is a comparison of the deaths at a given age with the population living at that age.

In the absence of accurate registration of births, the United States census has been at a loss to compute birth rates. The only way to obtain an approximate estimate for the whole country, or for a State, is to take the number of children under 1 year of age, found living at the date of the census, and add to this the number of children who died during the census year and who were born during that same year. In absence of accurate data for computation of the birth rate, the census officials resort to the method of comparing the number of children in the population to the number of women of child-bearing age, from decade to decade, in order to secure evidence as to the decline of the birth rate, as described in Bulletin No. 22, of the census. Thus, the ratio of the living children under 5 years of age to each 1,000 living women of child-bearing age is used as the best available substitute for the birth rate in the United States since 1850. But this ratio is not comparable with other countries which have accurate registration.

2. State and Local Reports of Vital Statistics

The collection of vital statistics received its first impetus in towns where registration of deaths was desired for sanitary ends. Dr. Edward Jarvis states that New York City began to publish mortality statistics in 1804; Boston in 1813; Philadelphia in 1825, and Baltimore in 1836. The States in which these cities are located did not legislate until later. The most striking characteristic of these state and municipal reports is their lack of uniformity. The data of one State or city are, therefore, not comparable with those of another State or city. In fact, these local reports are not sufficiently uniform to admit of the comparison of the data in successive reports. As pointed out earlier in this paper, the officials to whom the work of registration has been intrusted in the United States have not had sufficient training either in statistical method or in the importance of the various public health problems. The adoption of the "standard certificate" of death, and the wide adop-

tion of the Bertillon system of classification of the causes of death, have brought a greater degree of uniformity into mortality records. Nevertheless, the accuracy of registration still depends in large measure upon the efficiency of the local official, who may correct errors on the certificate of death if he is sufficiently alert to its importance.

The American medical press is not critical enough of the contents, nature and objects of local health reports. As yet, there is no clear recognition of the real local value of such reports. As a result of a more careful and scientific study of vital statistics, it may be possible to set forth clearly that the great waste of life can be diminished by measures to prevent accidents or the unnecessary prevalence of disease.

Local health reports fail to make a careful study of the local mortality as affected by race, nativity and occupation. If the ages at death are given at all, they are generally given by arbitrary divisional periods of life. Rarely is any information published locally as to mortality by occupation, and yet this is essential to a knowledge of the relative influence upon the health of workers of various occupations.

Mortality from special causes, by streets or by wards, is often useful information in locating the causes of disease. In Liverpool, England, for example, to emphasize the prevalence of diarrhoea in 1905, a table was prepared showing the mortality by streets on which three or more deaths from this disease occurred. The Boston Registry Department gives a full account of the elements of the population and the mortality of every ward in the city. Most reports of boards of health give an elaborate analysis of mortality by months, instead of giving the necessary data by ages at death. For many important purposes, age and sex distribution are needed, while the distribution by months is of only limited significance.

Wherever the colored population exceeds 10 per cent. of the total, the mortality should be separated by color. The mortality rates are so different in the two elements of population, that frequently comparison of two places with different proportions of white and colored is impossible unless the mortality is stated separately for the two races. The same would be true in comparing different wards of a city.

The health and mortality of school children of 6 to 14 years

of age is a matter of great concern at present. The school officials might be requested to report, week by week, the deaths among their pupils. A table could then be constructed at the end of the year, showing the average number of pupils in different schools according to grades, with the mortality in each, together with a statement of ages at death and the principal causes of mortality. These data would throw light upon the problem of school hygiene.

Mortality from trade diseases and accidents is of the greatest concern to those interested in the preservation of national vitality and efficiency. Present local methods of presenting occupation-mortality statistics, where they are given at all, are usually very crude, and the tables are of little value. The best work in this field is found in England, in the reports of Sheffield and Blackburn—the former for the cutlery trade, the latter for textiles. The Blackburn report might serve as a model for such cities of the United States as Fall River and Lawrence. Such tables in the United States would afford an accurate insight into the extent of industrial disease. For these data in this country we must depend upon insurance companies, labor unions or private investigations. The Rhode Island reports state only the average age at death among men dying in different trades, instead of giving age distribution by periods of life and the more important causes. Where the reports are limited to specific trades (*i. e.*, textiles), the causes of death need not be extended beyond tubercular and respiratory diseases and accidents. Dangerous trades where accidents are likely to occur (*i. e.*, iron and steel) should be reported in detail—every fatal accident, with age, specific occupation and cause of death. The agitation for workmen's insurance or compensation should rest upon accurate data, which at present, in the United States, do not exist.

Besides what has been already said as to the inadequate provisions for the registration of births, the local importance of the earliest possible registration of births needs emphasis, in the interest of public health and the movement against high infant mortality. Early registration facilitates the work of the health visitor and sanitary inspector. The New York law requires report within ten days, and imposes a \$100 fine, in addition to making the failure to report a misdemeanor. Some States offer a fee to the physician for registration of births.

3. *Reports of Hospitals and Institutions for Defectives, Dependents and Delinquents*

For hospitals, most of the reports are decidedly defective and more or less misleading. Cases are duplicated, and there is lack of uniformity in description. Improved methods are needed, and it seems advisable for local health officers to insist upon accurate and specific returns from such institutions, in order that the real mortality rate may be known. The mortality record should show, in a special table, the deaths of inmates by age and cause of death, with a statement of the average number of inmates. These tables would correct wrong conclusions as to the healthfulness of particular localities. Furthermore, the deaths in institutions should be redistributed, according to the place of residence of the deceased, to prevent errors, which are especially serious in the case of hospitals for the treatment of special diseases, which attract large numbers from outside the locality. Not even New York City makes a proper redistribution. London does make this correction. The tables of institutions do not, as a rule, conform to the method of showing mortality at different ages and for specified causes.

Defectives, Dependents and Delinquents.—The president of the National Conference of Charities and Correction, in his inaugural address in 1891, discussed state and national registration of defectives, dependents and delinquents. He pointed out the fact that before the tables of the decennial census were issued they ceased to have scientific value. Reports in the States, he characterized as lacking in completeness, uniformity and scientific methods. He proposed to introduce the efficient methods of the charity-organization societies, as illustrated from their experience in New York, Boston, Buffalo and Indianapolis, into state boards of charity, in order to secure accurate registration and classification. The conference has a committee on statistics which makes a report at each session and seeks to promote uniformity and completeness in records.

There is no lack of statistical output, but the product is unfinished and largely indigestible. Busy men and women have no time to disentangle real information from unrelated masses of data. We have not even a trustworthy quantitative measure of the feeble-minded in the United States. The numerical strength of the insane

outside of institutions is unknown. Current institutional statistics are not of a sort to greatly promote our knowledge of insanity as a social phenomenon. Not long since, a foreign official asked for the statistics of the number of persons in the United States supported through public outdoor and indoor relief. He was astonished by the reply that the facts were beyond any one's knowledge. He wished, further, to learn the number of destitute children cared for by public and private agencies. Only the roughest estimate could be given.

There is a woeful lack of competent statistics of poverty and pauperism. We need more data and better analysis. Theories of social amelioration should be based upon a thorough study of the facts, and the results should be tested by careful records. The reports of the census office in 1906 on paupers in almshouses and benevolent institutions, prepared by John Koren, expert and special agent, mark the beginning of a new era of intelligent inquiry—the first step for a proper understanding of the existing state of the social ill health. For the first time we possess a definite basis of fact as to the extent of pauperism in the United States. In foreign countries more has been done on this problem, because it is more pressing. An interesting attempt at international comparison will be found in the second series of reports on British and foreign trade and industry. This report includes much statistical material on poverty and pauperism in the most civilized countries, including the United States. Want of uniformity in American statistics, however, made it impossible for the report to utilize other than the state returns of New York, Massachusetts and Minnesota, which are scarcely representative of the country.

The German Union investigated seventy-seven German cities, and published the results in 1886-1888. A committee of statisticians formulated a plan and secured the co-operation of the relief officers of the various localities. In each city cards on a uniform scheme were furnished. The work was done by government officials, directed by a committee of the Union, and paid for by the cities. A rate of dependency was thus calculated for seventy-seven cities, with a population of over four millions.

The centralized system of the English Local Government Board furnishes each year very complete statistics of outdoor and indoor relief. In the United States the charity-organization reports are

valuable, but no statistics exist that compare with those of England and Germany. The reports of state boards of charity are, as a rule, so imperfect as to be exasperating to the investigator. The committee of the National Conference collected data for a year, and then had to report that "your committee does not pretend to offer complete statistics for even one community." And yet it is not too much to say that correct and uniform records lie at the foundation of modern charity work.

In correction, a German investigator declared as to American conditions: "They are lacking complete statistics in each case." We leave practically unworked the primary sources of information; *i. e.*, the records of police courts, grand juries, etc. A statistical test has never been applied to our system of penology as a whole. Our bookkeeping is so imperfect that we do not know, even approximately, the extent of the local juvenile delinquency problem.

I shall enumerate other sources of information on matters related to the public health movement, without detailed criticism:

- (1) Reports of local charity-organization societies, medical societies, tuberculosis associations and labor unions.
- (2) Records of insurance companies.
- (3) Commissions on the problem of industrial accidents and their compensation.
- (4) Annual school reports.
- (5) Special reports on the following topics:
 - a. "Immigration," by the commission.
 - b. "Women in Industry," by the Bureau of Labor.
 - c. "Workmen's Budgets," by Robert Chapin and Mrs. L. B. More.
 - d. "Industrial Accidents and Dangerous Trades," by the Bureau of Labor.
 - e. "Wages," Twelfth Census.
 - f. "Child Labor," by state and local agencies.
 - g. Report on "National Vitality," by Irving Fisher.
 - h. Backward school children; physical defects.

II. CAUTION IN THE USE OF STATISTICAL DATA NEEDED

We live amid a wilderness of recorded data. Prophets seize eagerly upon the chaotic mass embodied in reports called statistics, and appropriate such facts as meet their needs—then they proclaim

this version of the facts as the truth. Some one declares that 500,000 persons have received relief in New York City during the last year; another exclaims, "I hear the wail of 2,000,000 children who are in want"; still another is sure that his statistics prove that the jails, almshouses, hospitals for the insane, and most other public institutions are chiefly populated by immigrants.

When two quantities are compared we must consider whether they are comparable. If we compare the general death rates of two cities in which there are widely different proportions of colored and white population error will be sure to arise because of the higher death rate among colored, if we conclude as to the relative healthfulness of the two cities from the figures given. It is never safe to take published statistics at their face value without knowing their meaning and limitations. The actual use and appreciation of statistics is ultimately a matter of intelligence, special knowledge, and common sense. The following are illustrations of error:

(1) The Census of 1890 presented very wrong inferences from some of its statistics. It was claimed, for example, that for each million of the foreign-born there were 1,768 prisoners, while for each million of the native-born there were only 898. These facts, so it was claimed, showed a tendency to criminality among the foreign-born twice as great as among the native-born. But this inference overlooked a most important fact—*i. e.*, that criminals are recruited mainly from adults, and that the proportion of foreign-born adults to the total foreign-born population is much greater than that of the native-born adults to the native population. The latter includes many more children. If we compare the number of male prisoners with the number of males of voting age, a very different result appears. The number of male prisoners per 1,000,000 of voting age in 1890 was as follows:

Native white of native parents.....	3,395
Native white of foreign parents.....	5,886
Foreign whites	3,270

In this analysis, age for age, the foreign-born show a lower rate than the native-born. Besides, the table shows criminality among the native-born of foreign parents twice as high as either of the other groups. This requires an explanation and a remedy.

(2) The report of the Secretary of War in 1899 discussed the

rate of death from diseases in the Philippines among the soldiers (17.2 per 1,000). He compared this rate with rates among the general population in Washington and Boston, and it appeared not excessive when so compared. But such comparison of the death rate of soldiers, mostly 18 to 30 years of age, could not be made with a city population of all ages, including infants, where the death rate is so high. Besides, soldiers represent a selected class. If he had compared the rate for soldiers with the rate among the general population, 15 to 45 years of age, he would have observed it to be about 10.9 per 1,000, which would still not have allowed for the selected class. If he had compared the rate in the Philippines with the rate among United States soldiers before the Spanish war he would have found it to be four times as great.

(3) If we consult the table on mortality among males and females in 1908 for the registration area, Bulletin 104, the following appears: *Percentage of gainfully employed to the whole number of deaths*—

Age Grouping.	Males.	Females.
All ages	52.3	8.3
10-14 years	4.0	1.7
15-19 "	58.3	25.7
20-24 "	82.7	28.0
25-34 "	86.5	19.2
35-44 "	85.7	16.2

If the conclusion followed from these figures that mortality of women in industry is slight, it would overlook the important fact that many women have left industry and became housewives when diseases prove fatal. For exact conclusions we need facts—*i. e.*, the morbidity rate among women in industry.

(4) Suppose we have two cities of 1,000 each. We assume the same death rate for each at the same ages—*i. e.*, under 10 years, a death rate of 100 per 1,000; over 10 years, a rate of 10 per 1,000. The distribution in town A by ages is 100 under 10 years, and 900 over 10 years; in town B, 150 under 10 years, and 850 over 10 years. Therefore, the crude rate for A will be 19, and for B 23.5 per 1,000. This apparent difference is caused by the presence of a larger proportion of children in B among which the rate is always higher—the difference is not due to difference in healthfulness of the two towns.

It is, evidently, impossible to compare the healthfulness of two localities until differences in the death rate due to different age-grouping have been excluded. If comparison is made on the basis of the crude uncorrected rate error may result. Statistical method has a way of correcting death rates for difference in sex and age-grouping which will render the results comparable in determining relative healthfulness.

(5) The chief function of statistics is to show correlation of data and thus arrive at the relations of cause and effect. But often a single correlation leaves out of consideration other important correlations. An instance of this error is found in the annual report of a western college in which comparison of the average standing and failures among non-smokers, moderate smokers and excessive smokers is made:

	Non-Smokers.	Moderate.	Excessive.
Number of Students	111	35	18
Average for year	85.2%	73.3%	59.7%
Percentage of failures	3.2%	14.1%	24.1%

From these data it was concluded that smoking was the cause of the failure of a very large percentage of those who smoked. The correlation is clear but the explanation is not adequate. The men who smoked in that college were those who for other reasons would have valued other things more than marks. They went in society, they were prominent in athletics, or they were the fellows who did not come to college to study. Smoking was one of the things they did to pass the time.

If space permitted, this paper would be made much more complete by a presentation of some concrete data on such problems as tuberculosis, medical inspection in the schools, infant mortality and trade diseases and industrial accidents, which would make clear just how statistics may throw light upon the problems with which the public health movement is most concerned. Prevention means getting at the causes, and statistics show where to look for these causes. The removal of the causes then becomes a matter of public policy, the results of which are to be tested by a further collection of statistical data. Thus the beginning and the end of the movement toward social amelioration appeals to the science of statistics for its aid and guidance.

In conclusion, the great needs seem to be for a more complete and accurate registration of local vital statistics, greater uniformity in classifications, more training on the part of those who have charge of the records, and a higher appreciation of the usefulness of statistical data. The National Government may perform at least two functions in the great public health movement—*i. e.*, (1) investigation and (2) dissemination of information. To do this there is need for a Bureau of Public Health which shall become the central investigating agency and depository for the results gathered from the whole country. This bureau will seek to promote uniformity of classification which will make the results comparable, and will inform public opinion by well-ordered and authentic facts.